

### Задание 3.4

In [162]:

```
from skimage.io import imread, imshow
from skimage import img_as_float, img_as_ubyte
%matplotlib inline
import numpy as np
```

In [163]:

```
img = imread('landscape.png')
```

In [164]:

```
hist = [0]*256
for i in img.flatten():
    hist[i] += 1
hist = np.array(hist)
```

In [165]:

```
# Делаем cdf
cdf = [0]*256
for i in range(257):
    summ = 0
    for i in range(i):
        summ += hist[i]
    cdf[i] = summ
```

In [166]:

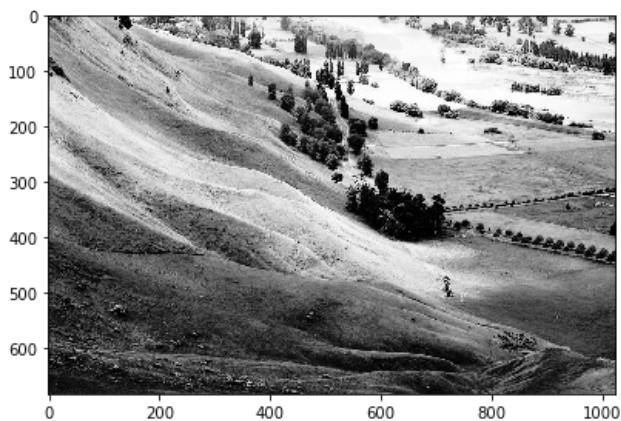
```
cdf_c = sorted(list(set(cdf))) # убираем повторяющиеся значения через множество и сортируем
if cdf_c[0] == 0:
    min_cdf = cdf_c[1]
else:
    min_cdf = cdf_c[0]
```

In [167]:

```
for i in range(img.shape[0]):
    for j in range(img.shape[1]):
        p = img[i][j]
        img[i][j] = round(255 * (cdf[p] - min_cdf) / (img.size - 1))
imshow(img)
```

Out[167]:

<matplotlib.image.AxesImage at 0x144f40b8>

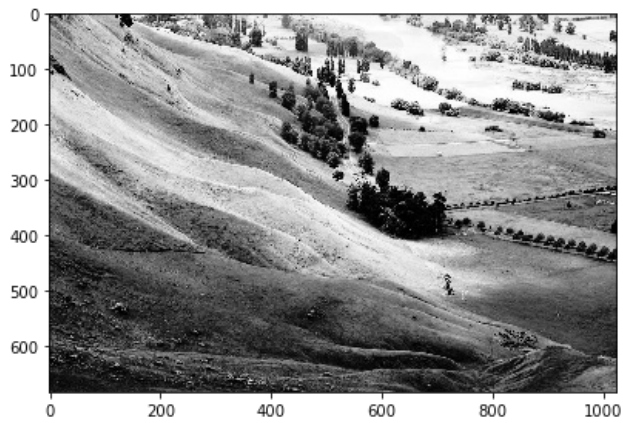


In [159]:

```
imshow(imread('landscape-histeq.png'))
```

Out[159]:

<matplotlib.image.AxesImage at 0x14234838>



In [160]:

```
np.array_equal(img, imread('landscape-histeq.png'))
```

Out[160]:

True